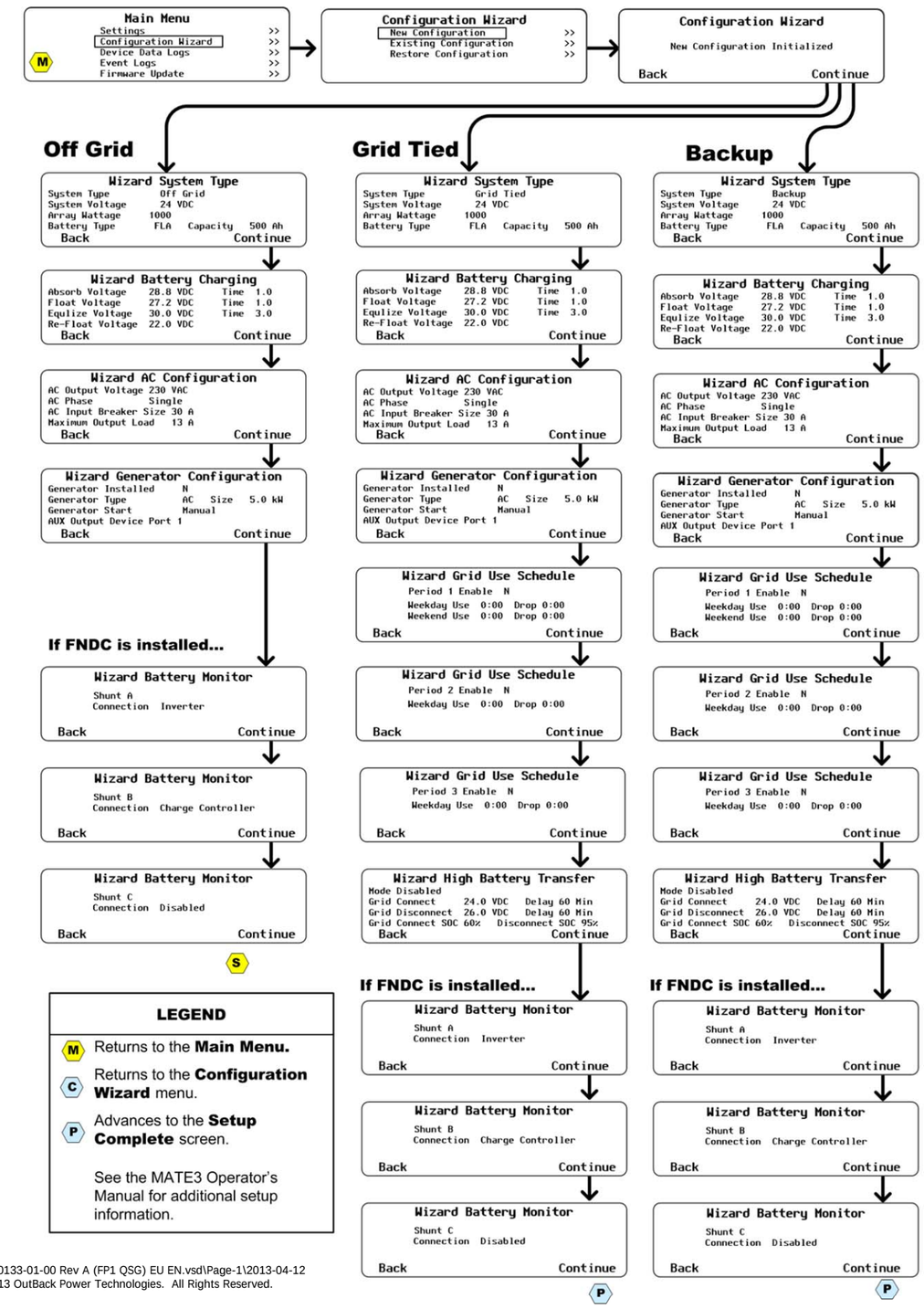
MATE3 Programming

IMPORTANT:

Programming should be done by a qualified installer who is trained on programming inverter power systems. Failure to program accurate parameters for the system could potentially cause equipment damage. Damage caused by inaccurate programming is not covered by the limited warranty for the system.



LEGEND

- M — Returns to the **Main Menu.**
- C — Returns to the **Configuration Wizard** menu.
- P — Advances to the **Setup Complete** screen.

See the MATE3 Operator's Manual for additional setup information.

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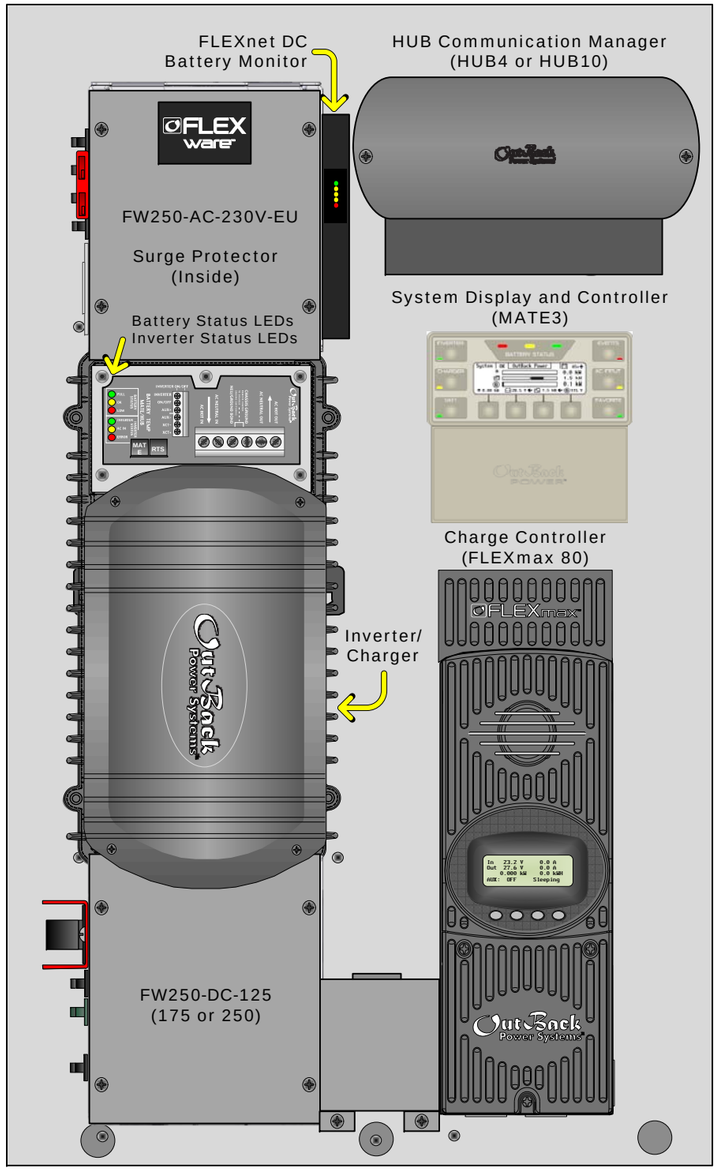
Components



Major Components

FLEXpower System Products

Inverter/Charger	**FX Series** **VFX Series** **GTFX Series** **GVFX Series** **GFX Series**
AC Conduit Box	**FW250-AC-230V-EU**
DC Conduit Box	**FW250-DC-125** **FW250-DC-175** **FW250-DC-250**
System Display and Controller	**MATE2** **MATE3**
Charge Controller	**FLEXmax 60** **FLEXmax 80**
Communications Manager	**HUB4** **HUB10**
Remote Temperature Sensor (RTS) **FLEXnet DC Monitor (FNDC)** **Surge Protector**	

Customer-Supplied Components

AC Source	**Utility Grid, or AC Generator**
Main Electrical Panel (or overcurrent device for AC source)	
Electrical Distribution Subpanel (Load Panel)	
Battery Bank	
Photovoltaic (PV) Array (with PV Combiner Box)	

FNDC LED Indicators

Color	Battery State-of-Charge
Green	> 90% (blinks if charge parameters are met)
Yellow	≥ 80%
Yellow	≥ 70%
Yellow	≥ 60%
Red	≥ 60% off, < 60% solid, < 50% blinks

Battery Status LED Indicators

Color	12 V Inverter	24 V Inverter	48 V Inverter
Green	12.5 Vdc or higher	25.0 Vdc or higher	50.0 Vdc or higher
Yellow	11.5 to 12.4 Vdc	23.0 to 24.8 Vdc	46.0 to 49.6 Vdc
Red	11.4 Vdc or lower	22.8 Vdc or lower	45.6 Vdc or lower

Surge Protector LEDs

Active	Error	Phase
Yellow	Red	DC
Yellow	Red	AC IN
Yellow	Red	AC OUT

Inverter Status LED Indicators

Green	Inverter on (solid) or standing by (flash)
Yellow	AC source in use (solid) or standing by (flash)
Red	Inverter error or warning (see manual)

Contact Technical Support:
Telephone: +1.360.618.4363
Email: Support@outbackpower.com
Web site: www.outbackpower.com

IMPORTANT:
Not intended for use with life support equipment.

Mounting

WARNING: Fire/Explosion Hazard
Do not place combustible or flammable materials within 3.7 m (12 feet) of the equipment. This unit employs mechanical relays and is not ignition-protected. Fumes or spills from flammable materials could be ignited by sparks.

WARNING: Personal Injury
Use safe lifting techniques and standard safety equipment when working with this equipment.

IMPORTANT:
Clearance and access requirements may vary by location. Maintaining a 91.4 cm (36 inches) clear space in front of the system for access is recommended. *Consult local electric code to confirm clearance and access requirements for the specific location.*

FP1 Dimensions:

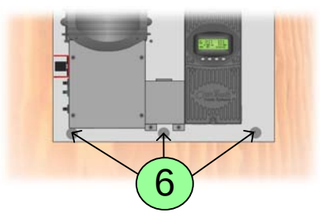
85 cm (33.5") tall X 50 cm (19.75") wide

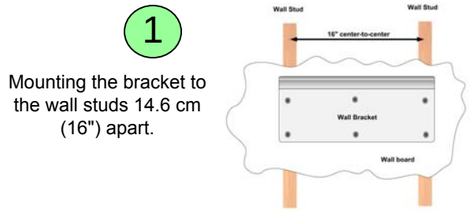
To install the mounting bracket:

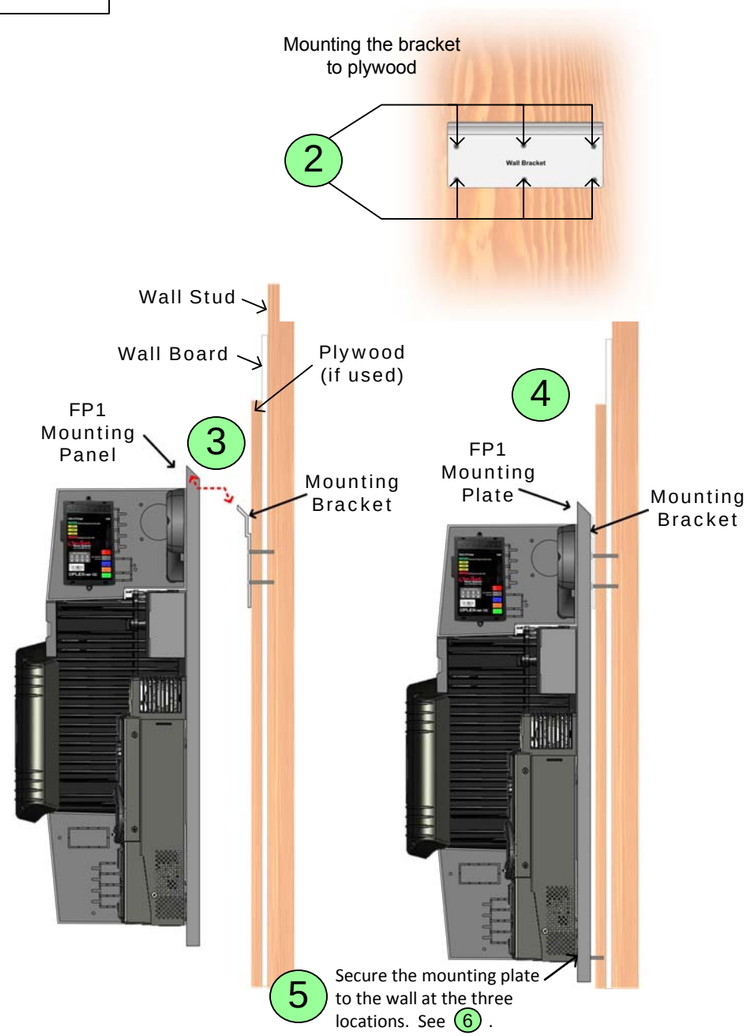
1. Place the mounting bracket at the desired height for the panel.
2. Secure the mounting bracket to the surface. Use all six mounting slots provided on the bracket.

To mount the FP1 panel on the bracket:

3. Lift the mounting plate above the wall bracket.
4. Slip the top of the mounting plate over the angled lip of the wall bracket.
5. Secure the lower back flange of the mounting plate to the wall (with appropriate hardware).
6. Insert all three 1-inch nylon hole plugs into the rear slot access holes.







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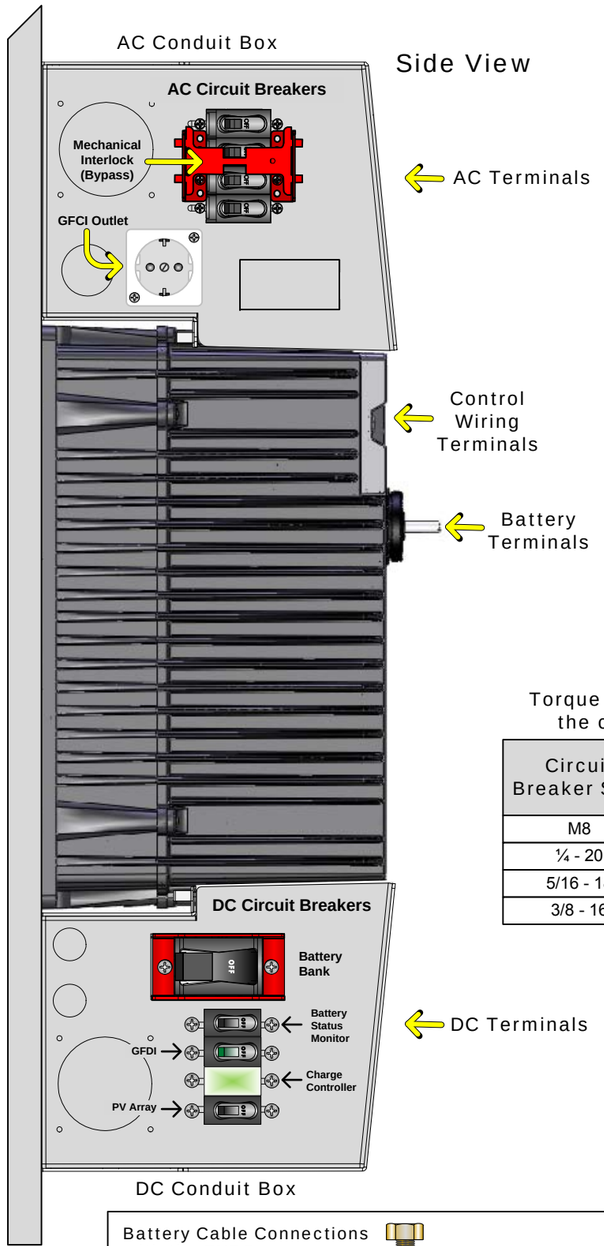
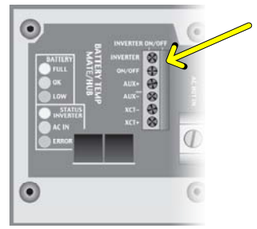
Wire Sizes/Torque Requirements



AC Wire Sizes and Torque Values

Wire Size		Torque	
mm²	AWG	Nm	In-lb
2.5 – 6	#14 - 10	2.3	20
10	#8	2.8	25
16 – 25	#6 - 4	4.0	35
35	#3	4.0	35
35	#2	4.5	40
50	#1	5.6	50
70	1/0	5.6	50

It is recommended that conductors be #6 AWG THHN copper, or larger, rated to 75°C (minimum) unless local code requires otherwise.



Control Wiring Terminal Block:

The Inverter ON/OFF terminals are used for connecting an external ON/OFF switch. To use this feature, the jumper must be removed. (See installation manual for details.)

The AUX terminals provide a 12 Vdc signal. The AUX terminals can be used to start a generator or to control external devices.

Torque requirements for the conductor lugs

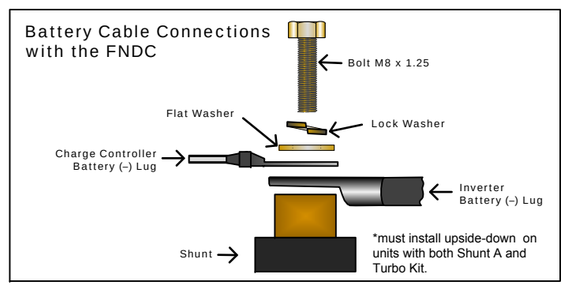
Circuit Breaker Stud	Torque	
	Nm	In-lb
M8	2.3	20
¼ - 20	4.0	35
5/16 - 18	5.6	50
3/8 - 16	25.4	225

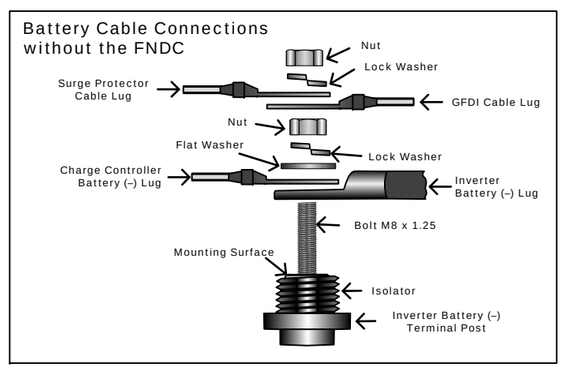
Minimum DC Cable based on the DC Circuit Breaker

DC Circuit Breaker	Cable Size	Torque	
		Nm	In-lb
125	70 mm² (1/0)	5.6	50
175	70 mm² (2/0)	25.4	225
250	120 mm² (4/0)	25.4	225

CAUTION: Equipment Damage

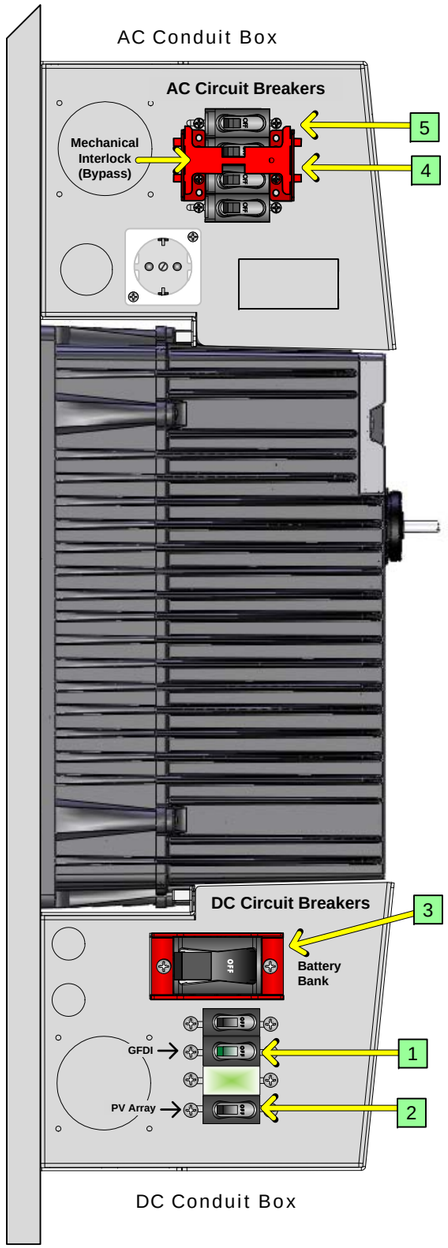
When connecting cables from the inverter to the battery terminals, ensure the proper polarity is observed. Connecting the cables incorrectly can damage or destroy the equipment and void the product warranty.


Battery Cable Connections with the FNDC
Bolt M8 x 1.25
Flat Washer
Lock Washer
Charge Controller Battery (–) Lug
Inverter Battery (–) Lug
Shunt
*must install upside-down on units with both Shunt A and Turbo Kit.



Energize/Startup Procedures

Side View



Pre-startup Procedures:

1. Double-check all wiring connections.
2. Inspect the enclosure to ensure no tools or debris has been left inside.
3. Disconnect all AC loads at the backup (or critical) load panel.
4. Disconnect the AC input feed to the FLEXpower ONE at the source.

To energize or start up the system:

1. Using a digital voltmeter (DVM), verify 12, 24, or 48 Vdc on the battery terminals by placing the DVM leads on (1a) and (1b). Confirm that the voltage is correct for the inverter model. Confirm the polarity.

> **CAUTION: Equipment Damage**
> Incorrect battery polarity will damage the inverter.

2. Turn on (close) the GFDI circuit breaker. 1
3. Verify the voltage on the PV terminal is in the correct range of open-circuit voltage by placing the DVM leads on (2a) and (2b). **Confirm the polarity**.
4. Turn on (close) the PV input circuit breakers. 2
5. Turn on (close) the DC circuit breaker from the battery bank to the inverter. 3
6. Verify 230 Vac on the AC output circuit breakers by placing the DVM leads on (3+) and (3–).
7. Turn on (close) the AC output circuit breakers. 4
8. Connect the AC source. Verify 230 Vac on the AC input circuit breakers by placing the DVM leads on (4+) and (4–).
9. Turn on (close) the AC input circuit breakers. 5
10. Turn on the AC disconnects at the load panel and test the loads.

Functional Test Points

Battery Voltage Test Points

- (1a) Battery Negative (–) Terminal on the Inverter
- (1b) Circuit Breaker Terminal connected to the Battery Positive (+) Cable
- (1c) Circuit Breaker Terminal connected to the Inverter DC Positive (+) Cable

PV Voltage Test Points

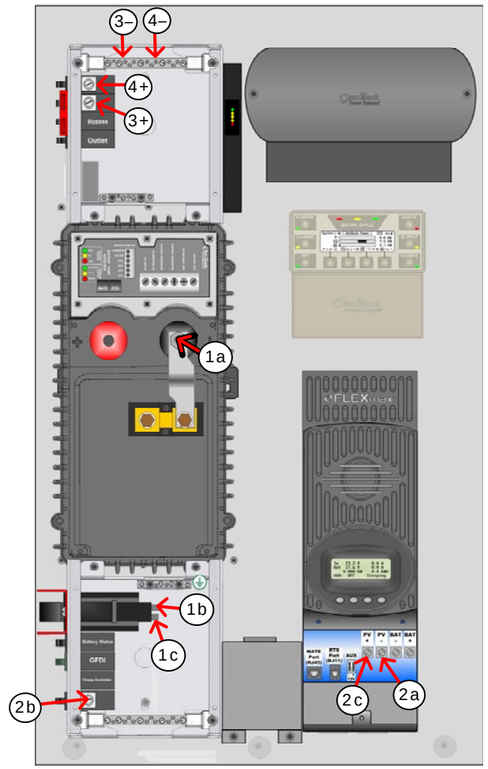
- (2a) PV Negative (–) Terminal on the Charge Controller
- (2b) Circuit Breaker terminal for the PV
- (2c) PV Positive (+) Terminal on the Charge Controller

AC OUT Voltage Test Points

(3+) (3–)

AC IN Voltage Test Points

(4+) (4–)



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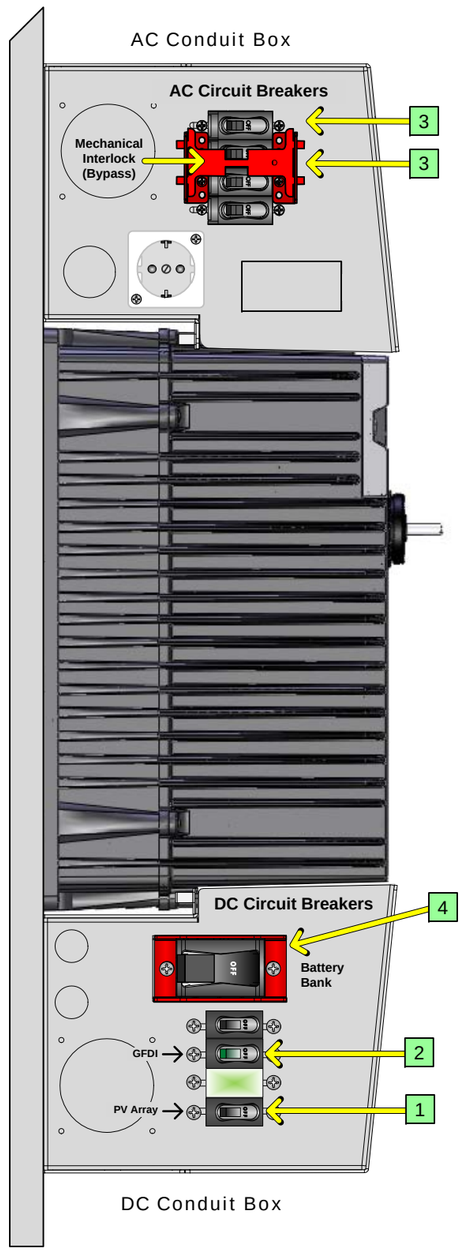
De-energize/Shutdown Procedures

Side View



> **WARNING: Lethal Voltage**
> Review the system configuration to identify all possible sources of energy. Ensure ALL sources of power are disconnected before performing any installation or maintenance on this equipment. Confirm that the terminals are de-energized using a validated voltmeter (rated for a minimum 1000 Vac and 1000 Vdc) to verify the de-energized condition.

> **WARNING: Burn Hazard**
> Internal parts can become hot during operation. Do not remove the cover during operation or touch any internal parts. Be sure to allow them sufficient time to cool down before attempting to perform any maintenance.

To de-energize or shut down the OutBack devices:

1. Turn off (open) the AC circuit breakers. 1
2. Turn off (open) the DC circuit breaker for the battery. 2
3. Turn off (open) the PV circuit breaker. 3
4. Turn off (open) the GFDI circuit breaker. 4
5. *Verify 0 Vdc on the DC input terminals of the inverter by placing the voltmeter leads on (1a) and (1c).
6. *Verify 0 Vdc on the PV terminal by placing the voltmeter leads on (2a) and (2c).
7. *Verify 0 Vac on the AC output circuit breakers by placing the voltmeter leads on (3+) and (3–).

*See the illustration that identifies the locations of the functional test points that is included with the Startup Procedures.

General Wiring

FLEXpower ONE

AC Source
(single)

AC Distribution Panel
(or disconnect device)

AC IN

Neutral

30 A Circuit Breaker
(Maximum)

Ground

Input

Output

Bypass

Outlet

AC LEGEND

- Neutral (N)
- HOT L1 (L1)
- Ground

Ground Electrode Conductor

AC Subpanel

HOT

NEUTRAL

30 A Circuit Breaker
(Maximum)

GROUND

Loads
(230 Vac)

PV Circuit Breaker

Battery Status

GFDI

Charge Controller

FLEXmax

OutBack Power Systems

(RTS)

IMPORTANT: **Example only. Actual wiring may vary. Factory wiring not shown.** All configurations must comply with local and national electric codes. Consult your local electric authority to ensure compliance.

IMPORTANT:
Indoor installation only.

Photovoltaic Array (PV)

FLEXware PV8

If the FLEXnet DC battery monitor is not installed, the DC shunt will not be installed.

If the DC shunt is not installed, connect the DC negative (–) cable directly to the DC negative (–) terminal on the inverter.

DC Negative (—) Terminal on the Inverter

DC Negative (—) Cable

DC LEGEND

- Negative (–)
- Positive (+)
- Ground

Battery Bank

Vented Battery Enclosure

1 Connects to the terminal on the circuit breaker that is opposite the inverter DC cable.

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